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ABSTRACT

Libraries that have assistive technology can help adult educators meet the information access needs of adult learners with disabilities. For example, the Special Needs Center at the Burton Barr Phoenix Public Library has been providing services to individuals with disabilities for more than 18 years. The Special Needs Center's services include providing technology resources, building community, and training. Technology resources include hardware and software solutions that enable persons with a broad range of disabilities to access library resources. Community involvement enables the Special Needs Center to keep up with the changing needs of individuals with disabilities, acquire the latest technology, and design the necessary training. Training, which is a major part of the center's service, includes ongoing technology training for persons with disabilities as well as for professionals who work with persons who are disabled. The example of the Special Needs Center illustrates ways in which adult educators can use a library's resources to meet the needs of adult learners with disabilities. (Author/KC)

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Shared Responsibility For Training Adults With Disabilities To Access Information Through Technology: A Library's Experience

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Abstract: Libraries which have assistive technology can help adult educators meet the information access needs of adult learners with disabilities. This is the story of the Special Needs Center at the Burton Barr Phoenix Public Library. For more than 18 years, the Center has been a national model for providing services to individuals with disabilities. The Special Needs Center's story focuses on technology resources, building community, and training.

Technology resources include hardware and software solutions which enable individuals with a broad range of disabilities to access library resources. Community involvement enables the Special Needs Center to keep up with the changing needs of individuals with disabilities, acquire the latest technology and design the necessary training. Training is a major component of the Center's service. On going technology training is available to individuals with disabilities as well as to professionals who work with the disabled community.

Suggestions are made for specific ways in which adult educators can use a library's resources to meet the needs of adult learners with disabilities.

Shared responsibility for training adults with disabilities to access information through technology: A library's experience

Adult educators know that knowledge empowers adult learners. It empowers ABE students to take charge of their lives. Knowledge empowers professionals to stay current in their practice, and knowledge empowers individuals with disabilities to live productive lives.

A key role for adult educators is to provide links between knowledge, resources, and adult learners. We know libraries are tremendous sources of knowledge. Furthermore, as figure 1 portrays, **accessible** library resources empower people with disabilities.

Figure 1
Knowledge & Empowerment

Knowledge = Power
Libraries = Sources of Knowledge
Accessible Library Resources =
Empowerment for People with Disabilities

The American's with Disabilities Act (ADA) mandates that libraries make their resources and services available to individuals with disabilities. Libraries which take this mandate seriously are invaluable resources to adult educators and adult learners with disabilities.

This is the story of how the Special Needs Center at the Burton Barr Phoenix Public Library makes library access a reality. The story began in 1981, long before the passage of the ADA, when the library purchased its first reading machine. Since that time the library's resources and array of assistive technology have greatly expanded making the Special Needs Center a national model for providing library services to individuals with disabilities. Building community among adults with disabilities and various service providers has been a high priority since the inception of the Special Needs Center. Community input is used to define direction and share responsibility for providing assistive technology and training. The Special Needs Center's story includes technology resources, community involvement and training.

Technology resources: Before going any further, we need to define a couple of terms:

* **Universal design:** According to Burgstahler, Comden & Fraser (1997) universal design means designing services and resources for people with a broad range of abilities and disabilities. Mann (1997) points out an underlying premise of universal design. That is, considering the needs of individuals with disabilities during the design phase will make structures or

products useable by everyone. This concept is important because in the ideal world any piece of technology would serve the needs of individuals with disabilities without investing in expensive adaptations. For example, all computers would come with built in screen reading programs enabling computer users to hear what is on the screen. Progress is being made in the development of accessibility features. The more recent versions of Windows come with accessibility features such as "sticky keys". This allows a user to press keys in succession rather than two at the same time. No extra software is required to enable this feature which helps many people who have difficulty using the keyboard. However until universal design becomes the standard, it will be necessary to have some specialized adaptive or assistive technology.

***Assistive Technology and Adaptive Technology:** Both of these terms are used and accepted when referring to technology which enables individuals with disabilities to use the technology.

Assistive technology and computers: Assistive computer technology includes hardware and software. An example of a hardware and software solution is the use of a scanner which is hardware along with software so text can be converted to speech.

The hardware and software solutions may be easy or difficult to implement. An easy implementation example is screen magnification software. It is generally not hard to learn to use and can require little training once installed. An example of a more difficult implementation is the combination of screen reading software and voice input. This requires an investment of time for both installation and training.

Individuals may find the assistive technology easy or difficult to use. As previously discussed, most individuals find magnification software easy to use whereas a screen reading program tends to be more complex and more difficult to use.

Assistive computer technology ranges from expensive to inexpensive. Of course "inexpensive" is relative. Software for people with learning disabilities that assists in organizing written thoughts is less than $200. Some of the newer voice activation software for dictating text ranges from $50.00 to $200.00. On the expensive side, a Refreshable Braille display costs several thousand dollars.

It may be generic or unique. Generic features include the capability of enlarging the mouse to a big black pointer or in Web browsers, both Netscape and Internet Explorer, the ability to change font sizes is built in. An example of a very unique assistive technology is customizing the configuration of a screen reader so it works well with a particular application. For example, designing customization so a screen reader works well with a library's catalog.

Whether the solution is easy, inexpensive and readily available, or more complex and expensive, the issue is commitment. When the accessibility solution is more complex, there must be an investment of time and resources.

Computers and disabilities: Computers assist people with a variety of disabilities ranging from blindness to mobility limitations (see figure 2).

Figure 2
Computers assist people with

- ***visual impairments/blindness**
- ***hearing impairments**
- ***speech impairments**
- ***learning disabilities**
- ***mobility limitations**

Visual impairment & blindness: Computers can be adapted for individuals with visual impairment through magnification software and/or large monitors. Changes in screen contrast or color and attention to glare make using a computer easier for people who have some usable vision. Keyboard commands, rather than the mouse, with voice output assist both blind and visually impaired computer users. Refreshable Braille displays make information on a computer screen available in braille. Reading machines enable individuals who are blind to read print materials. Components of reading machines include computers, optical character recognition software, scanners, and synthesized speech.

Hearing impairments: Technology for individuals with hearing impairments include TTY/TTDs, Text electronic phone communications, Braille text telephones, computers that can communicate with telephones as well as with other computers, computerized sign language training, captioning systems, amplifications systems, and assistive listening devices. Other computer adaptations include on-line spell checking and thesaurus programs, and methods to review and correct sentence structure.

Learning disabilities: Individuals with learning disabilities benefit from some of the same adaptive computer technology and programs that serve individuals with visual and hearing impairments. Things like: screen reading programs and speech synthesizer; smart word processors; real time spell checkers; grammar checkers and methods for modifying the size and color of text. The reading pen allows an individual to scan a word, see the word in a screen on the pen and hear the word.

Mobility limitations: Individuals with mobility limitations find the following adaptations helpful when using computers:

- **Adjustable tables
- **Keyboard and mice adjustments like Microsoft accessibility control panel and alternative keyboards and keyguards.
- **On screen keyboards with joysticks or other pointing devices
- **Voice input, using voice to dictate text and control the computer

Many libraries have some or all of the assistive technology previously described. Libraries provide opportunities for individuals with specific disabilities to learn what assistive technology is available and how it can be used.

Community Resources: Much of the Special Needs Center's assistive technology has been purchased through grants. Here is where building community enables the Center to meet information access needs of adults with disabilities by continually updating the assistive technology.

The Special Needs Center worked with several community agencies on a grant that placed workstations with Internet access and assistive technology in those organizations. Staff in those agencies also contributed their expertise. The result was that all of the staff involved increased their knowledge of the assistive technology and formed stronger relationships. In addition, the staff believe citizens benefit by increased availability of the technology and information and more effective referrals to each other's agencies.

As a result of strong community ties, the Center has become a valuable community resource. For example, Rio Salado Community College used the Special Needs Center as a GED site for visually impaired students. One advantage of meeting at the Center was that students could use the equipment, especially the CCTV print enlarger, as they needed.

Another example is the senior citizen who is blind and attended Arizona State University West. He came to the Center to find magazine articles from the 1940's. Staff found the articles he requested. He read them on the scanner and taped the articles so he could take home the recording for future reference.

Several students who are deaf or hearing impaired have taken the library's Basic Internet class with a sign language interpreter. The instructor and assistant were well aware that these students were watching the instructor, the interpreter, and using the computer and knew to adjust the pace accordingly. In some cases, Rehabilitation counselors and teachers accompanied the students to class to learn along with them.

In addition to providing assistive technology to the community, the Special Needs Center provides training on the technology.

Training: Too often expensive assistive technology is not used to its full potential because individuals with disabilities who would benefit from the technology do not know how to use it. Training is the link that makes information access possible via technology.

Training on the Center's assistive technology is available to individuals with disabilities as well as to professionals who work with people with disabilities. The foundation which undergirds that training is understanding.

* **Understanding the learner**
* **Understanding the technology**
* **Understanding the training process**

The learner: Librarians generally are experienced in conducting a reference interview to help library patrons find the information they need. Special Needs Center staff use this same approach and get to know the learner by conducting a more extensive reference interview. The interview helps the staff understand what the learner's goals and objectives are. What the learner's disability is. What adaptive equipment would be most appropriate, and what the learner knows about technology. Some people know a lot about computers but are not familiar with adaptive technology. For example, Mary was a computer user before losing her vision. She didn't need to learn computer operations but did need to learn how to use the screen reading program. Some folks have never used a computer prior to becoming disabled. In these cases, training needs to include both basic computer operations and instruction on what ever assistive technology is necessary to accommodate for the disability.

Professionals often use the Special Needs Center to help their disabled clients. Once again the interview is used to learn about the needs of the professionals as well as the needs of their clients. We learned about the impact of this training through a needs assessment conducted a few years ago (Holt and Hole, 1995:92). One professional respondent commented:

> ". . . you are essential in training teachers and students in the use of the technology. Teachers have rare opportunities to access information anywhere else. Students can either get training from your center or from teachers. Either option involves primary training from you."

If you, as an adult educator, want to learn more about assistive technology and information access check out your local library. The library may have the technology and offer training.

The Technology: Understanding the technology is of utmost importance, When new technology or new adaptive software is added, the Special Needs Center staff are given the opportunity to become proficient in using the technology or software before conducting any training. This doesn't mean that everything always goes smoothly in the training process. Technology failure does occur. However, such failure can be an important part of the learning process. Learners begin to understand that adaptive technology has not yet reached perfection, and patience is an important component in using any type of adaptive technology.

Understanding computer anxiety and relieving the fears of "technophobes" is another important aspect of training. Individualized training allows the learner to progress at his or her own rate, taking as long as necessary to become comfortable with the equipment.

The Training Process: Training at the Center begins with needs assessment. Needs assessment takes various forms depending on the purpose. Formalized surveys of library users with disabilities and professionals are used to determine future training needs whereas the reference interview is used to identify immediate training needs.

Additionally, needs assessment can be a mechanism for building community. We used a focus group, made up of community members with specific disabilities, representatives from vocational rehabilitation services and other agencies serving clients with disabilities, to help us plan Dragon Dictate (voice activated computer software) training. This focus group helped identify training needs, determine goals and objectives, anticipate problems, and acted as a referral source for potential trainees.

Once training needs have been identified, goals and objectives are developed. The goals and objectives are viewed as being flexible and subject to change as new and/or different needs emerge.

Training implementation consists of the basics like methods, techniques, materials and learning activities. Methods include both individualized and group training. While most training is individualized with learners arranging for training at a time that meets their schedules, there are situations in which group training is more efficient. Group training was chosen for our Information Connection Workshop which included introduction to telecommunications, the world wide web, and e-mail. Participants could then arrange for individualized training if more in depth training were needed.

Training techniques are, by necessity, very "hands on". Demonstrations, return demonstrations and lots of practice are the standard. Training materials are produced in regular and large print, braille, audio cassette and diskette.

Training evaluations include formal follow up evaluations, end of training evaluations, and more informal observations of learner progress. Regardless of the type of evaluation, the goal is the same: to continually improve training and discover new ways of meeting the needs of our constituents with disabilities.

Learning from our experiences. Over the 18 years the Special Needs Center has been serving people with disabilities, a great deal has been learned. We have learned when an organization such as a library and the community come together to serve the needs of a group, e.g. the disabled community, the effects of such an effort continue to grow over time. Figure 3 summarizes some of the lessons learned with respect to building community.

Networking with a variety of community groups is an effective way to foster understanding of disabilities and the needs of individuals with disabilities.

As in any endeavor, political agendas exist. One of the reasons some individuals with disabilities use the library as a primary information resource is because the library is viewed as

neutral--that is devoid of political agendas. It is important to be aware of what the political agendas are, but steer clear of becoming involved in the politics.

Adapting to change is essential. As one of our clients told us, "the Special Needs Center needs to stay on the cutting edge of technology". This means keeping up with the rapid change in technology, understanding changing populations, and changing needs. For example, when the Special Needs Center began, its major constituents were individuals who were blind or visually impaired. Over time the Center has responded to the needs of individuals with other disabilities. A growing area is serving individuals with multiple disabilities.

Figure 3
Some Lessons Learned Through Experience

About Building Community and Determining Direction:
- **Understand disabilities and what needs to be done to insure information access**
  - ***Network with disability groups**
  - ***Network with service providers**
- **Be aware of political agendas and special interests**
- **Be ready to adapt to change**
  - ***Changing populations**
  - ***Changing needs**
  - ***Changing technology**

Training at the Center has provided another avenue for learning. What we have learned about training comes from a variety of sources including staff, other trainers, and participants in the training. Some of these lessons appear in Figure 4.

In addition to understanding the learner and his or her disability, it is important to find out what the learner expects from the training and technology. Sometimes people have unrealistic expectations about what technology and/or training can do. The trainer must be realistic about how the technology and training can assist the individual. There is a fine line between helping the learner see what is realistic and disillusioning her or him.

Questioning is a strategy for gaining insight into the learner's needs and expectations. It is also a useful tool for determining how well the individual comprehends the training.

The companion to questioning is listening. Listening helps uncover things like:

- *how the learner views technology. Is he or she a technophobe?
- *the level of motivation. Some folks may be mildly curious about the technology while others want to learn all they can as quickly as possible
- *the learner's feeling about his or her disability

When training people to use assistive technology, simpler is better. Get down to basics quickly and figure out exactly what the learner needs to do in order to be successful in the first training session. This also means allowing plenty of time for practice.

A great deal of the trauma associated with learning to use new technologies can be avoided by expecting the unexpected. Think about what is likely to go wrong, such as technical failure, and how to deal with it. A sense of humor helps to keep training on track when the unexpected does occur. Humor also helps reassure learners that when technical problems arise, it is not the end of the world.

Figure 4
Some Lessons Learned Through Experience

About Training:

Understand the learner and his or her disability
Understand what the learner expects from training
Be realistic about what training can do
***** Question, Question, Question**
***** Listen, Listen, Listen**
***** Simplify, Simplify, Simplify**
***** Practice, Practice, Practice**
Expect the unexpected
Prepare for technical failure
Maintain a sense of humor

Summary: When adult educators are looking for ways to serve the needs of their adult learners with disabilities, libraries can be an important resource. As we have previously pointed out, many libraries provide an array of assistive technology, information resources and training. Here are some specific ways in which libraries can assist adult educators and their student with disabilities.

** Libraries which have assistive technology can serve as sites for adult education classes.
**Libraries can help learners with disabilities access information in a variety of formats.
*Adult learners with disabilities can use the library's assistive technology to browse the Internet as well as send and receive e-mail.
**Libraries can provide information and referral to other assistive technology resources and services within the community.
**Libraries may provide assistive technology training to both learners with disabilities and adult educators.
**Librarians with expertise in information access and assistive technology can make valuable contributions as members of advisory boards to adult education programs.

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